Biology 4605/7220   Name_____
Quiz #9b   18 November 2015

1. This model has two explanatory variables and three explanatory terms:

$$Q = \beta_o + \beta_{X1}X1 + \beta_{X2}X2 + \beta_{X1\cdot X2}X1\cdot X2 + \varepsilon$$

For the following tests, list the number of
explanatory and response variables.   Response   Explanatory

Regression of proportion of prey
population captured on light levels and predator density.   _____   _____

ANCOVA with two categorical variables.   _____   _____

Correlated densities of 2 species of trees, measured in
30 sample plots.   _____   _____

Genotype frequencies of homozygous versus heterozygous individuals
in 4 different populations.   _____   _____

Three way ANOVA.   _____   _____

Analysis of variance of ATP content of cells from 3 types of tissue. _____   _____

2. An entomologist obtains a sample correlation of r = -0.5 between egg number and survival in the corn earworm *Heliothis armigera*.
The explained variance is thus $r^2 =$ _____

The unexplained variance is thus 1 - $r^2 =$ _____.

Compute the F-ratio for an analysis of 35 cases, by setting up and completing an ANOVA table where SS_{model} is the explained variance, $SS_{residual}$ is the unexplained variance, and the model has one degree of freedom.
 SS_{total} =   _____

 __Source__   __df__   __SS_____   __MS_____   __F____

Does the F-ratio depend on the magnitude of SS_{model} ? _____